



Published in final edited form as:

Arch Environ Occup Health. ; : 1–3. doi:10.1080/19338244.2017.1402749.

Coal miner participation in a job transfer program designed to prevent progression of pneumoconiosis, United States, 1986–2016

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Abstract

The Part 90 program was designed to prevent progression of pneumoconiosis in U.S. coal miners by establishing their right to transfer to a less dusty job in the mine. We calculated the proportion of Part 90-eligible miners who participated during 1986–2016, examined participation by region, and compared characteristics of miners by participation status. Of the 3,547 eligible miners, 14.4% exercised their Part 90 option. Miners working in states outside central Appalachia, and those with more severe pneumoconiosis, were more likely to participate. The primary goal of respiratory health surveillance of coal miners is early detection of disease so that preventive action can be taken. Future studies should seek to better understand factors influencing Part 90 program participation.

Keywords

Coal workers' pneumoconiosis; occupational lung disease; medical removal protection program

Introduction

Coal workers' pneumoconiosis (CWP) is an occupational lung disease caused by inhalation of respirable coal mine dust. The Federal Coal Mine Health and Safety Act of 1969 (Coal Act) was enacted to protect the health of U.S. coal miners. In addition to establishing permissible exposure limits for coal mine dust, the Coal Act authorized the National Institute for Occupational Safety and Health (NIOSH) to administer the Coal Workers' Health Surveillance Program (CWHSP), with a primary purpose of identifying miners with early stage CWP and preventing it from progressing to disabling disease. The CWHSP

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offers periodic chest radiographs to coal miners, and if there's evidence of CWP, the miner has a legal right to work in a job where the average concentration of respirable coal mine dust is maintained at or below the applicable Federal standard; this can be accomplished through engineering controls at their current job, or through transferring to a job in a section of the mine with lower average dust concentrations, while retaining his or her regular rate of pay. This right, called the Part 90 option, is authorized under 30 Code of Federal Regulations, Part 90.¹ The Part 90 option program was designed to allow miners to stay employed and prevent progression of CWP by reducing their exposure to coal mine dust.

When working miners participating in the CWHSP have evidence of CWP, they are confidentially informed by mail of their Part 90 option eligibility. Miners can then submit documentation to the Mine Safety and Health Administration (MSHA) to exercise their Part 90 option, which is voluntary and does not expire. Two reports^{2,3} from the 1980 s reported on the proportion of eligible miners who exercised their Part 90 option (19% and 23%) and discussed possible reasons for low participation. Our objective was to more fully characterize participation in Part 90 using three decades of most recent data to determine whether additional efforts are needed to better understand factors influencing participation.

Methods

Working CWHSP participants who were administered radiographs during January 1, 1981 – September 19, 2016 and had evidence of CWP,⁴ were eligible for analyses. A determination of CWP was defined as major category 1 or greater pneumoconiosis using the International Labour Office standards.⁵ Radiographs with a category 2/1 profusion of small background opacities or greater were classified as severe CWP.⁶ For miners participating more than once during this period, data were used from the first encounter with a determination of CWP. Surface coal miners became fully eligible to participate in the CWHSP and exercise the Part 90 option beginning on August 1, 2014,⁷ and those with a new determination of CWP after this date were included.

MSHA collects data on miners who exercise the Part 90 option, and provided data on miners who exercised their option during January 1, 1986 – November 21, 2016. We estimated the period of time a miner waited to exercise their option by calculating the interim between the date of CWP determination by CWHSP, and the date a miner informed MSHA that he or she was exercising their Part 90 option. Recent reports have identified high rates of severe CWP among working coal miners in the central Appalachian states of Kentucky, Virginia, and West Virginia.⁸ Therefore, in addition to calculating the proportion of eligible miners exercising their Part 90 option, we examined Part 90 option participation by region, and compared characteristics of miners based on participation status using the chi-square test for independence for categorical variables and analysis of variance (ANOVA) for continuous variables. Data were analyzed using SAS 9.4 (Cary, NC).

Results

In total, 14.4% (509/3547) of eligible miners exercised their Part 90 option. Compared to miners who did not exercise their option, those who exercised their Part 90 option were more

likely to have a longer coal mining tenure and severe CWP, and less likely to be white (Table 1). Among miners who exercised their Part 90 option, the median interval between CWP determination and notification of MSHA was 63 days (range 0–10,831 days). Miners who exercised their option more rapidly (< 63 days) were older at time of radiograph (50.4 years vs. 47.0 years; $p < 0.0001$), and had longer mining tenures (24.8 years vs. 22.2 years; $p = 0.0029$). Miners working in central Appalachian states were less likely to exercise their Part 90 option, compared to those working in other states (13.1% vs. 17.3%, $p = 0.0007$). Among miners exercising the Part 90 option, those in central Appalachia also had longer mean tenures than those working outside this region (25.8 years vs. 20.0 years, $p < 0.0001$). Nine states (Alabama, Colorado, Illinois, Kentucky, Ohio, Pennsylvania, Utah, Virginia, and West Virginia) had at least 50 miners who became eligible for the Part 90 option during the study period. Of these states, miners from Virginia and Kentucky were least likely to exercise their option, at 8.9% and 9.8%, respectively; miners from Utah and Colorado were most likely to exercise their option, at 32.8% and 30.2%, respectively.

Discussion

The Part 90 option program was designed to protect miners with evidence of coal workers' pneumoconiosis by establishing the right to work in an environment with a lower concentration of respirable coal mine dust. During 1986–2016, 14.4% of eligible miners exercised their Part 90 option. Previous publications reporting data from the 1970s and 1980s found that 19%–23% of miners exercised this option,^{2,3} but detailed methods were not provided, which limited our ability to directly compare results. In 1986, Hoffman² reflected on possible reasons for low participation in Part 90, including downturns in the coal industry, perceived reductions in dust levels in the mines, fear of employer reprisal, and misconceptions by miners with respect to program provisions. The author indicated that a collaborative NIOSH and MSHA survey of working miners was ongoing, with the goal of elucidating factors influencing participation, but to our knowledge, no report on these data was issued. In a law review article published in 1989, Spieler³ discussed possible deterrents to miner participation in the Part 90 program. Broadly speaking, these reasons included the potential for conflict between the job transfer provisions afforded by Part 90 and existing job bidding schemes based on seniority; miners' aversion to call attention to themselves by asserting Part 90 rights; miners' perception that a job transfer won't convey health benefits; and miners' lack of awareness of the Part 90 program and confusion as to its purpose.

Data limitations prevented us from calculating participation trends over time, but the current study found that during recent decades, the vast majority of eligible miners have chosen to not exercise their Part 90 option rights. Future research could be directed at determining factors associated with miners' decisions to participate or not participate in Part 90. Further investigation of some of the hypotheses outlined by Hoffman and Spieler might be merited, with additional consideration given to how recent economic trends and regulatory changes (detailed below) could possibly influence participation. Previous reports did not present characteristics of the miners who chose to exercise their Part 90 option; we found that miners who worked in states outside central Appalachia and miners with more severe CWP were more likely to do so. The associations between these factors and the decision to exercise a Part 90 option may also warrant additional study.

Exposure to coal mine dust is the only cause of CWP. During 1981–2016, 3,547 Part 90 option-eligible miners were informed by CWHSP that they had CWP, but only 14.4% elected to exercise the option. A recent MSHA rule lowered the amount of respirable coal mine dust allowed in mines, and directed NIOSH to expand medical surveillance⁹ of coal miners to include surface miners, and to screen for conditions such as chronic obstructive pulmonary disease, which can be caused by coal mine dust exposure. Educational programs for miners should emphasize the Part 90 option and the potential health benefits of reduced exposure to respirable coal mine dust. Future studies should seek to understand barriers or disincentives to Part 90 option participation among eligible coal miners.

Acknowledgments

The authors would like to thank Eileen Storey, Janet Hale, and Philip Lindahl for assistance and feedback during the preparation of the article, and the staff of the Coal Workers' Health Surveillance Program.

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Table 1

Characteristics of active coal miners who were eligible to exercise the Part 90 option, by participation status, 1981–2016 (n = 3547).

	Part 90 Miners	Non-participants	<i>p</i> -value*
Total, n (%)	509 (14.4)	3038 (85.6)	
Characteristics			
Sex, n male (%) ^a	506 (99.8)	3024 (99.6)	1
Race, n white (%)	439 (94.6)	2698 (97.9)	0.0001
Age, mean (SD)	48.7 (7.7)	47.9 (9.5)	0.0774
Tenure, mean (SD)	23.5 (9.3)	22.2 (10.5)	0.0100
Severe CWP [€] , n (%)	103 (20.2)	443 (14.6)	0.0011

* Fisher's exact test used when cell size <5, for all others chi square or ANOVA was used.

^a Valid percentages are reported (missing data are excluded from calculations).

[€] CWP profusion of small pneumoconiotic opacities, subcategory 2/1 or greater.